



Tasmania

# Certificate of Accreditation

## On-Site Waste Water Management System

*This Certificate of Accreditation is hereby issued by the Minister for Justice and Workplace Relations pursuant to Section 59(2) of the Building Act 2000 and Part G2 of the Tasmanian Plumbing Code.*

System: **Taylex ABS (Advanced Blower System)  
AWTS**

Manufacturer/ **Taylex Industries Pty Ltd**

Supplier: **ABN 35 113 453 091**

Of: **56 Prairie Rd, Ormeau, QLD 4208**

*This is to certify that the **Taylex ABS (Advanced Blower System)** Aerated Wastewater Treatment System (the system) as described in Schedule 1 and using chlorine disinfection, has been accredited as an on-site waste water management system for use in single dwellings within plumbing installations in Tasmania. This accreditation is subject to the conditions of accreditation and permitted uses specified in Schedule 2, and in accordance with the Tasmanian Plumbing Code 2006.*

Dale Webster

**Director of Building Control**

*Delegate of the Minister for Justice and Workplace Relations*

**Date of Issue: 21 April 2011**

**Certificate No: BSR0603/2011**

Change of company name and address; certificate re-issued 25 October 2013

**This Certificate of Accreditation is in force until 20 April 2016**

## SCHEDULE 1: Specification

### Taylex ABS (Advanced Blower System) Aerated Wastewater Treatment System

#### General Description

The Taylex ABS (Advanced Blower System) ('the system') collects and treats domestic wastewater.

For treatment system schematic drawings and flow path, refer to Appendix A.

For Engineering drawings refer to Appendix B.

For treatment system components list refer to Appendix C

System Components (refer to Appendix C for specifications of both the concrete and the polyethylene tank options). Capacities of the polyethylene tank are very similar to those of the concrete tank described below:

One 9320 L vertical-axis pre-cast reinforced concrete cylinder containing:

- A 1684 L primary anaerobic chamber;
- A 842 L second anaerobic pre-treatment chamber with the outlet fitted with a Taylex disk filter;
- A 2071 L aeration chamber containing a Taylex 225 bubble air diffuser situated below fixed PVC plastic Media Substrate which has a surface area of 80 m<sup>2</sup> for biomass accumulation;
- An Air Blower which operates at 80 L/minute;
- High level float switches;
- A 662 L clarifying and sedimentation chamber;
- A Sludge Recirculation System in the Clarifier Chamber is constructed of 25mm and 15mm P.V.C pipe and operated by the Air Blower.
- A 621 L effluent storage chamber housing a 300 L chlorine contact tank and a Davey D25 submersible irrigation pump;
- Control module; and
- An audio-visual alarm system.

#### Energy consumption

Estimated Electricity Usage for a 4 person household with average wastewater flows and loads:

| Electrical Equipment      | Watts | Daily operation<br>(hours) | kWh/year | Estimated<br>~Annual Cost<br>@ ~\$0.20/kWh |
|---------------------------|-------|----------------------------|----------|--------------------------------------------|
| Nitto Blower              | 86    | 16                         | 502      | \$100                                      |
| Davey D25 irrigation pump | 390   | 0.6                        | 85       | \$17                                       |

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## Description of Treatment Processes

Wastewater enters the primary chamber where the bulk of the organic and inorganic solids are retained, by either settling to the bottom of the chamber or floating to the surface.

The clarified sewage flows into a second anaerobic settling chamber before passing through the Taylex disk filter into the aeration chamber. Organic material in the wastewater is consumed primarily by anaerobic microbes in the first two chambers and by aerobic microbes in the aeration chamber.

The 80 litre per minute Blower forces air through an air diffuser which is centrally located 300mm above the base of the aeration chamber. This supplies oxygen to aerobic microbes in the biomass suspended in the water and attached to the fixed Media Substrate.

The Blower is preset to operate continuously when commissioned. This is reviewed at the first service and may be reduced in blocks of ten minutes to a minimum of thirty minutes on and thirty minutes off. This enables the aeration time to optimally match the organic loading.

The biologically treated water flows from the aeration chamber through a 100mm P.V.C junction into the clarification chamber to allow settling of suspended particles to occur. A sludge return pipe located in the clarification chamber is activated during servicing to transfer accumulated settled sludge back to the primary chamber for further treatment.

The clarified effluent is then disinfected as it flows over chlorine tablets into the effluent storage chamber (pump-well). A ball bearing float switch attached to the pump triggers the irrigation pump to periodically discharge the effluent to the irrigation field. A high-level alarm located in the pump well detects high water levels.

The primary tank is de-sludged every three years or as deemed necessary by the service agent.

The treatment plant is fitted with a control panel containing a programmable logic controller (PLC).

The treatment system can be switched to the power saving mode, when no sewage flows are generated for an extended period of time (e.g. holidays). In this mode, aeration is reduced to the minimum required to supply the microbes with oxygen to ensure they remain viable.

The system is designed for domestic waste water flows in accordance with AS/NZS 1546.3 and is capable of achieving a BOD<sub>5</sub> less than or equal to 10 g/m<sup>3</sup> and a TSS less than or equal to 10 g/m<sup>3</sup> if required.

## Schedule 2: Conditions of Accreditation

### 1.0 Definitions

In this schedule:

**AS/NZS 1547** means the Joint Australian/New Zealand Standard 'AS/NZS 1547:2000 On-site domestic-wastewater management';

**AS/NZS 1546.3** means the Joint Australian/New Zealand Standard 'AS/NZS 1546.3:2001 On-site domestic wastewater treatment units, Part 3: Aerated wastewater treatment systems';

**AS/NZS 3000** means the Joint Australian/New Zealand Standard 'AS/NZS 3000:2000 Wiring rules';

**AS/NZS 5667** means the Joint Australian/New Zealand Standard 'AS/NZS 5667.1:1998 Water quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and preservation and handling of samples';

**BOD<sub>5</sub>** means '5-day Biochemical Oxygen Demand';

**Council** means 'the Municipal Council having jurisdiction';

**Commissioned** means 'when the test results from a NATA Certified Laboratory show that the water quality requirements for the AWTs have been met and all pre-commissioning tests have been carried out in accordance with AS/NZS 1547 on all associated equipment and the sub-surface irrigation system';

**Designer** means 'a person who has a specialty in the area of designing on-site waste water management system installations and may include but not be restricted to appropriately trained professional engineers, soil scientists, land surveyors and plumbers';

**Director** means 'the Director of Building Control';

**EC** means electrical conductivity

**E. coli** means 'Escherichia coli of the family Enterobacteriaceae which is a bacterium used in public health as an indicator of faecal pollution';

**g/m<sup>3</sup>** means grams per cubic metre

**Manufacturer** means 'Taylex Industries Pty Ltd';

**N** means 'Nitrogen';

**NATA** means 'National Association of Testing Authorities';

**PCA** means 'Plumbing Code of Australia 2004';

**Permit** means 'a Permit issued by the council pursuant to section 82 of the *Building Act 2000*';

**Permit authority** means 'a person or body authorised for that purpose by the council of the municipal area in which the on-site waste water management system is installed';

**Supplier** means 'the party that is responsible for ensuring that products meet and, if applicable, continue to meet, the requirements on which the certification is based.' The supplier for the **Taylex Advanced Blower System** is **Taylex Industries Pty Ltd**'

**System** means 'Taylex ABS (Advanced Blower System)'

**TPC** means the 'Tasmanian Plumbing Code 2006'.

**TSS** means 'Total Suspended Solids'.

## 2.0 General

- 2.1 The *system* must be supplied, constructed and installed in accordance with the design submitted and accredited by the *Director*.
- 2.2 The *system* must not be installed in a plumbing installation other than in accordance with the conditions of permit issued by the *Permit Authority*.
- 2.3 Each *system* must be permanently and legibly marked on a non-corrosive metal plaque or equivalent, attached to the lid with the following information:
- The brand and model name or designation of the system;
  - The *manufacturer's* name or registered trademark;
  - Top load limitations; and
  - The month and year of manufacture.
- 2.4 The *supplier* must supply the owner and occupier, of each installation, with a user manual setting out the following:
- (a) the treatment process;
  - (b) procedures to be followed in the event of a system failure;
  - (c) emergency contact number;
  - (d) care, operation, monitoring and maintenance requirements; and
  - (e) inspection and sampling procedures to be followed as part of the on-going monitoring and program required by the *permit authority*.
- 2.5 Any proposed modifications to the *system's* specified processes, equipment, materials, fittings or manuals must have prior authorisation in writing from the *Director* and may be subject to additional verification or testing.
- 2.6 Each application to a *permit authority* to install a *system* must be accompanied by a site-and-soil evaluation report and design report in accordance with AS/NZS 1547 as appropriate.
- 2.7 The *supplier* must provide the following information to each *permit authority* where it is intended to install a *system* in their jurisdiction:
- Statement of warranty
  - Statement of service life
  - Quality Assurance Certification
  - Installation Manual
  - Service Manual
  - Owner's Manual
  - Service Report Form
  - Engineering Drawings on A3 format
  - Detailed Specifications
  - Certificate of Accreditation and Schedules.
- 2.8 This Certificate of Accreditation is valid for five (5) years from the date of issue or until withdrawn by the *Director*.
- 2.9 At each anniversary of the accreditation date the *supplier* must submit to the *Director* a list of all *systems* installed in Tasmania during the previous 12 months. The *Director* may randomly select up to 10% of the installed systems from each year of installation. The *Director* will notify the *supplier's* nominated NATA accredited laboratory which systems are to be sampled and tested for *BOD<sub>5</sub>* and *TSS* and Chlorine residual. The sampling and

testing of the selected *systems* is to be done at the *supplier's* expense. The following results must be reported to the *Director*:

- Address of premises;
- Date inspected and sampled;
- Sample identification number;
- Chlorine Residual;
- *BOD*<sub>5</sub>;
- *TSS*; and
- Service history

- 2.10 Where a *system* has been found not to operate satisfactorily during its serviceable life, and as a result require modification to achieve the required water quality limits, all installed *systems* are to be modified accordingly.
- 2.11 When granting a *permit* the *permit authority* is to satisfy itself that the *designer's* choice of the *system* configuration is optimal for the proposed use and site conditions.
- 2.12 The *system* must not be deployed to areas where seasonal climatic conditions will negatively affect its proper operation (refer to *manufacturer's* specifications).
- 2.13 Prior to the granting of a *permit* to install a *system* the following reports must be submitted with an application to the *permit authority*:

*Site-and-soil evaluation report*

The site and soil evaluation report is to detail results of an assessment of the individual lot(s) for the public health, environmental, legal and economic factors which are likely to impinge on the location and design of a land-application system. (Refer to AS/NZS 1547 Clause 4.1.5 and associated appendices to 4.1).

*Design report*

The Design Report is to include the following:

- (a) Relevant aspects of the Site-and-soil Evaluation Report.
- (b) A report on the selection of the land-application system. (Refer to AS/NZS 1547, Clause 4.2.4 and associated appendices to Clause 4.2 for further information).
- (c) A report on the selection of the wastewater-treatment unit. (Refer to AS/NZS 1547, Clause 4.3.6 and associated appendices to Clause 4.3 for further information).
- (d) Sufficient information to show that the relevant performance requirements set out in the *PCA* have been met.
- (d) A loading certificate which sets out the design criteria and the limitations associated with use of the *system* and incorporates such matters as:
  - (i) System capacity (number of persons and daily flow);
  - (ii) Summary of design criteria;
  - (iii) The location of and use of reserve areas;
  - (iv) Use of water efficient fittings, fixtures, or appliances;
  - (v) Allowable variation from design flows (peak loading events);
  - (vi) Consequences of changes in loading (due to varying wastewater characteristics);
  - (vii) Consequences of overloading the system;
  - (viii) Consequences of underloading the system;
  - (ix) Consequences of lack of operation, maintenance and monitoring attention; and

- (x) Any other relevant considerations related to the use of the system.

2.14 The following reports must be submitted to the *permit authority* and owner and be made available to the *Director* upon request after *commissioning* of the system:

*Installation and commissioning report*

The Installation and Commissioning Report is to cover the 'as-constructed' records of the system installation together with the results of *commissioning* tests to demonstrate correct construction and installation and is to be provided to the owner and *permit authority* on completion of the work. (Refer to and AS/NZS 1547 Clause 4.5.6.3 and associated appendices to Clause 4.5).

*Inspection and Maintenance Report*

Maintenance reports cover ongoing inspection and maintenance operations in order to monitor the operation of the installation. (Refer to AS/NZS 1547 Clause 3.7.4 and associated Appendix 3A).

2.15 Where the supplied pump is not suitably rated for the proposed land application area it must be replaced with a pump which has a rated capacity that matches the hydraulic characteristics of the irrigation system and be capable of discharging at least 50% more than the 30 minute flow rate. For drip irrigation systems, ensure that drip emitter flow rates do not vary more than 10% from the design rate over the whole of the system when installed on a sloping site.

Note: The pump selection is to be based on flow, head loss and pressure requirements.

2.16 Effluent distribution by sub-surface application may be permitted where the *Permit Authority* is satisfied that the application for a *permit* to install the system has demonstrated that the:

- (a) effluent can be retained within the authorised land application area;
- (b) where applicable the land application system has been designed and is capable of being installed and maintained in accordance with AS/NZS 1547;
- (c) the location of the land application system satisfies the relevant requirements of the *State Policy on Water Quality Management 1997*; and
- (d) the discharge is capable of satisfying the relevant water quality limits (see 5.7).

### 3.0 Installation and Commissioning

- 3.1 The installation and operation of the system must comply with the conditions of accreditation and the *manufacturer's* instructions.
- 3.2 All plumbing work carried out in connection with the system installation must satisfy the requirements of the *Building Act 2000*, *TPC* and the Tasmanian Plumbing Regulations and be carried out by a registered plumber with appropriate training and qualifications.
- 3.3 All installations of the system must satisfy the installation requirements set out in *Appendix A1 – On-site Waste Water Management Systems* of the *TPC*.
- 3.4 All electrical work must be carried out by a licensed electrician and in accordance with relevant provisions of AS/NZS 3000.
- 3.5 The system requires a 240V AC power supply. A weather-proof isolating switch must be provided at the power outlet. The power supply must have its own clearly marked designated circuit breaker in the electricity supply fuse box.
- 3.6 Each system installation must be inspected and checked by the *designer* or the designer's agent. The *designer* on completion is to certify that the system has been constructed, installed and *commissioned* in accordance with its design, the conditions of accreditation and any additional requirements set out in the *permit*.

**Note:** Where the *designer* is not available to supervise the installation the *designer* should obtain signed certification from the installing plumber stating that the installation has been constructed/installed and *commissioned* in accordance with its design, the conditions of accreditation and any additional requirements of the *council* and/or *permit authority*.

- 3.7 Where discharging wastewater to a land application system by irrigation, a lockable sampling tap or gate valve is to be provided on the outlet pipe to the irrigation system.
- 3.8 A report is to be prepared by the *council* approved plumbing contractor detailing the inspection of the installation and the results of the *commissioning* tests and be accompanied by a certificate certifying that the system is operating and performing adequately (see 2.15).
- 3.9 Copies of the following reports/certificates must be submitted to the *council* and the owner as soon as practicable after the commissioning of the *system* and after each scheduled or unscheduled service or inspection for the period specified in the *permit*:
  - (a) The initial plant installation and commissioning report;
  - (b) All required laboratory analytical test reports; and
  - (c) All inspection and maintenance reports
- 3.10 Copies of any report or certificate required by the conditions of accreditation must be made available to the *Director* on request.
- 3.11 The *designer* is to provide a statement warning the user of which items and products that must not be placed in the *system*.
- 3.12 To verify that the plant is commissioned, sampling must be carried out, by a *council* approved person, for *BOD<sub>5</sub>*, *TSS* and Free Residual Chlorine. The samples are to be tested and reported on by a NATA certified laboratory.

#### 4.0 Maintenance and monitoring

- 4.1 Each installation must be serviced and monitored at not less than 3 monthly intervals in accordance with the conditions of accreditation, the conditions of *permit* and *manufacturer's* requirements.

**Notes:**

1. Only a licensed plumber can carry out the maintenance and required monitoring of the *system* other than electrical work unless licensed to do so.
  2. The licensed plumber may need to complete training by the *supplier* before carrying out any maintenance on the *system*.
  3. The maintenance and monitoring intervals may be combined provided the monitoring frequency remains at 3 month intervals.
- 4.2 The owner of the *system* must enter into and maintain a maintenance contract with the *council*, the *supplier* of the *system*, or other *council* approved plumbing contractor.
  - 4.3 The owner must enter into an agreement with the *council* to maintain the maintenance contract where that contract is with the *supplier* of the *system* or other *council* approved plumbing contractor.
  - 4.4 The *system* must be operated and maintained to ensure it performs continuously and without any intervention between inspections carried out by the *council* approved plumbing contractor.
  - 4.5 A service report is to be prepared by the plumbing contractor who carried out the work detailing the inspection of the installation and the results of all servicing tests and conditions at the completion of all scheduled or unscheduled services or inspections.
  - 4.6 The service report is to be accompanied by a signed certificate certifying that the system is operating and performing adequately.

- 4.7 A copy of the service report and certificate is to be provided to the occupant and *council*. Each service report is to contain a statement reminding the user of which items and products that must not be placed in the *system*.
- 4.8 Each service must include monitoring the operation of the *system* and associated land application system.
- 4.9 Maintenance must be carried out on all mechanical, electrical and functioning components of the *system* as appropriate.
- 4.10 The monitoring, servicing and reporting of the installation must include but not be restricted to the following matters, as appropriate:
- Reporting on weather conditions, ambient temperature, effluent temperature;
  - Odour;
  - Check and test pump
  - Check and test air blower, fan or air venturi and clean/replace air filters;
  - Check and test alarm system;
  - Check slime growth on membranes and report the on condition of membranes;
  - Check and report operation of sludge return, sludge level and de-sludging;
  - Check and record water meter reading (if fitted);
  - Check and record operation of irrigation area, irrigation fittings;
  - Check and clean/replace irrigation filters;
  - Check and report on water quality (testing for pH, Turbidity, EC and dissolved oxygen);
  - Check, and replenish chlorine disinfection system;
  - Cleaning of the following items at above the waterline–
    - clarifier,
    - pipework,
    - valves
    - walls of chambers

## 5.0 Performance

### 5.1 Hydraulic and Organic Loading:

The system is accredited for treatment of domestic wastewater from residential and commercial premises with the following MAXIMUM hydraulic and organic loads:

| Model      | Hydraulic load (L/day) | Biochemical Oxygen Demand (g/day) |
|------------|------------------------|-----------------------------------|
| Taylex ABS | 2000                   | 700                               |

Treated effluent from the system must not exceed the following limits (90% of samples):

| For sub-surface irrigation:                         |                                                           |
|-----------------------------------------------------|-----------------------------------------------------------|
| 5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ) | 20 g/m <sup>3</sup> (max. 30 g/m <sup>3</sup> )           |
| Total Suspended Solids (TSS)                        | 30 g/m <sup>3</sup> (max. 45 g/m <sup>3</sup> )           |
| For surface irrigation:                             |                                                           |
| 5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ) | 20 g/m <sup>3</sup> (max. 30 g/m <sup>3</sup> )           |
| Suspended Solids (SS)                               | 30 g/m <sup>3</sup> (max. 45 g/m <sup>3</sup> )           |
| <i>E. coli</i>                                      | 10 cfu/100 mL (max. 20 cfu/100 mL)                        |
| Free Residual Chlorine concentrations               | ≥ 0.5 g/m <sup>3</sup> and less than 2.0 g/m <sup>3</sup> |

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Director, Building Control  
*delegate of Minister for Workplace Relations*

## 6.0 On-going management

- 6.1 The mandatory servicing and monitoring is to commence 3 months after the plant is *commissioned*. The servicing and monitoring is to coincide with the *supplier's* required on-going routine scheduled maintenance program.
- 6.2 Where any *systems* have been found not to operate satisfactorily during their service life, and as a result require modification to achieve the required performance requirements, in particular, water quality limits, the installed *systems* are to be modified accordingly.
- 6.3 In the event of failure to comply with the water quality limits set out in these conditions, fortnightly sampling and testing for *BOD<sub>5</sub>*, *TSS* and Free Residual Chlorine must be carried out until the plant is *re-commissioned*.
- 6.4 The method of preserving and the handling of samples taken from the plant must satisfy the relevant requirements of *AS/NZS 5667*.
- 6.5 Copies of the following reports and certificates must be submitted to the *permit authority* and the owner as soon as practicable after the *commissioning* of the *system* and after each scheduled or unscheduled service for the period specified in the *permit*:
- (a) the initial plant installation and *commissioning* report
  - (b) all laboratory analytical test reports; and
  - (c) all inspection and maintenance reports
- 6.6 The *system* is to be de-sludged strictly in accordance with the *manufacturer's* recommendations and the sludge is to be disposed of in accordance with the Tasmanian Biosolids Reuse Guidelines and the conditions of *permit*.
- 6.7 Only persons with a waste transport business Environment Protection Notice are to be engaged for the removal, transporting and disposal of accumulated sludge removed from the *system*.
- 6.8 Any waste material removed from the *system* must be collected and disposed of or utilised by an approved facility or agency.
- 6.9 Measures are to be put in place during servicing that will protect the environment, personnel and any other persons who could be affected by the activity.

## 7.0 Permitted uses

- 7.1 The effluent is suitable for land application by way of the following forms:
- (a) sub-surface by:
    - i. subsurface drip irrigation in accordance with the relevant provisions of *AS/NZS 1547*;
    - ii. trenches, beds, mounds, evapo-transpiration systems in accordance with the relevant provisions of *AS/NZS 1547*;
  - (b) above ground by:
    - i. spray irrigation
    - ii. surface drip irrigation in accordance with the relevant provisions of *AS/NZS 1547*.

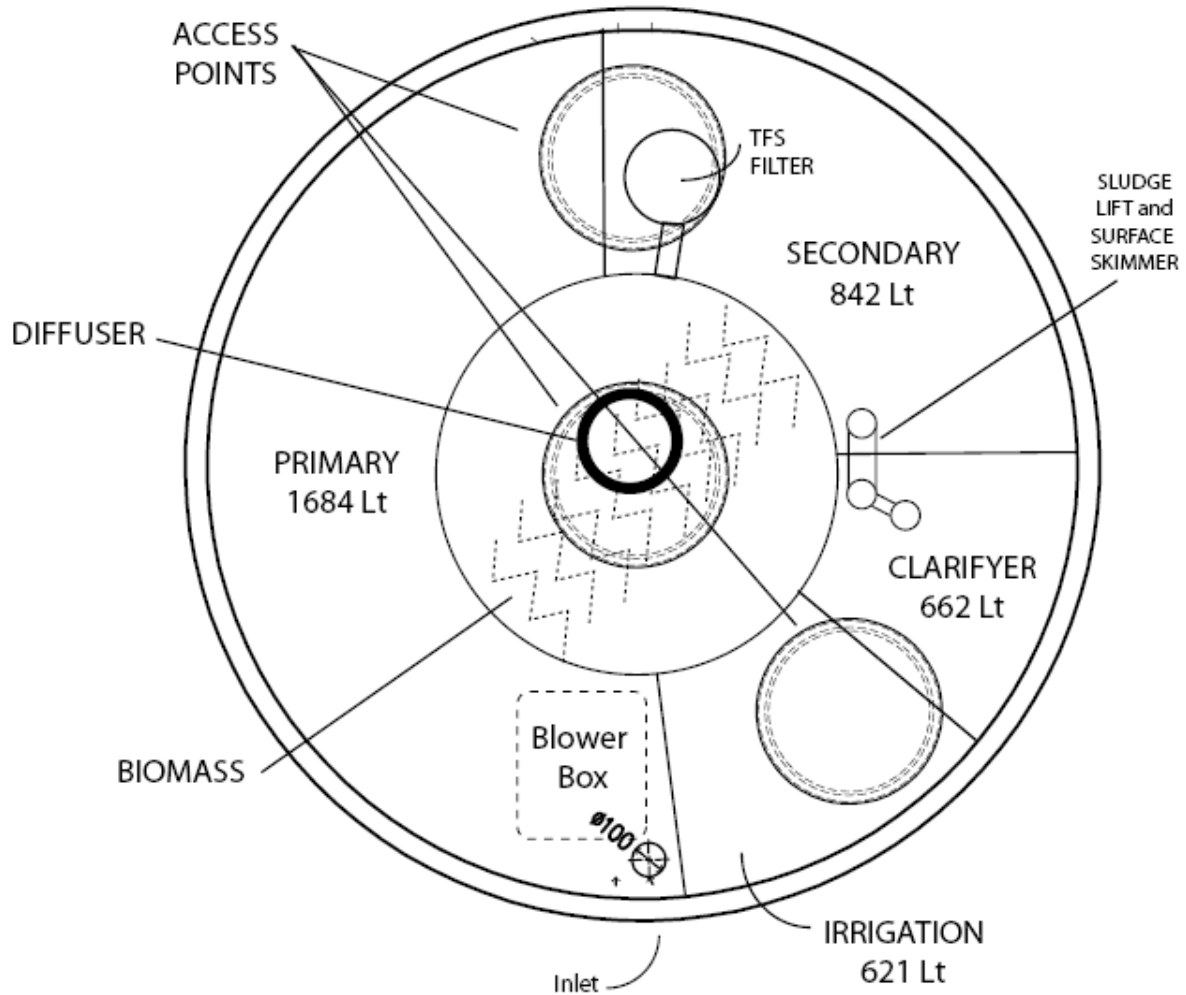
Note: Each of the above forms of irrigation is subject to consent from the *permit authority* and the relevant provisions of *AS/NZS 1547*.

- 7.2 Where it is not practicable for effluent from the *system* to be applied in accordance with *AS/NZS 1547* the method of discharge must satisfy contemporary relevant regulatory requirements to the satisfaction of the *permit authority*.

## Appendix A

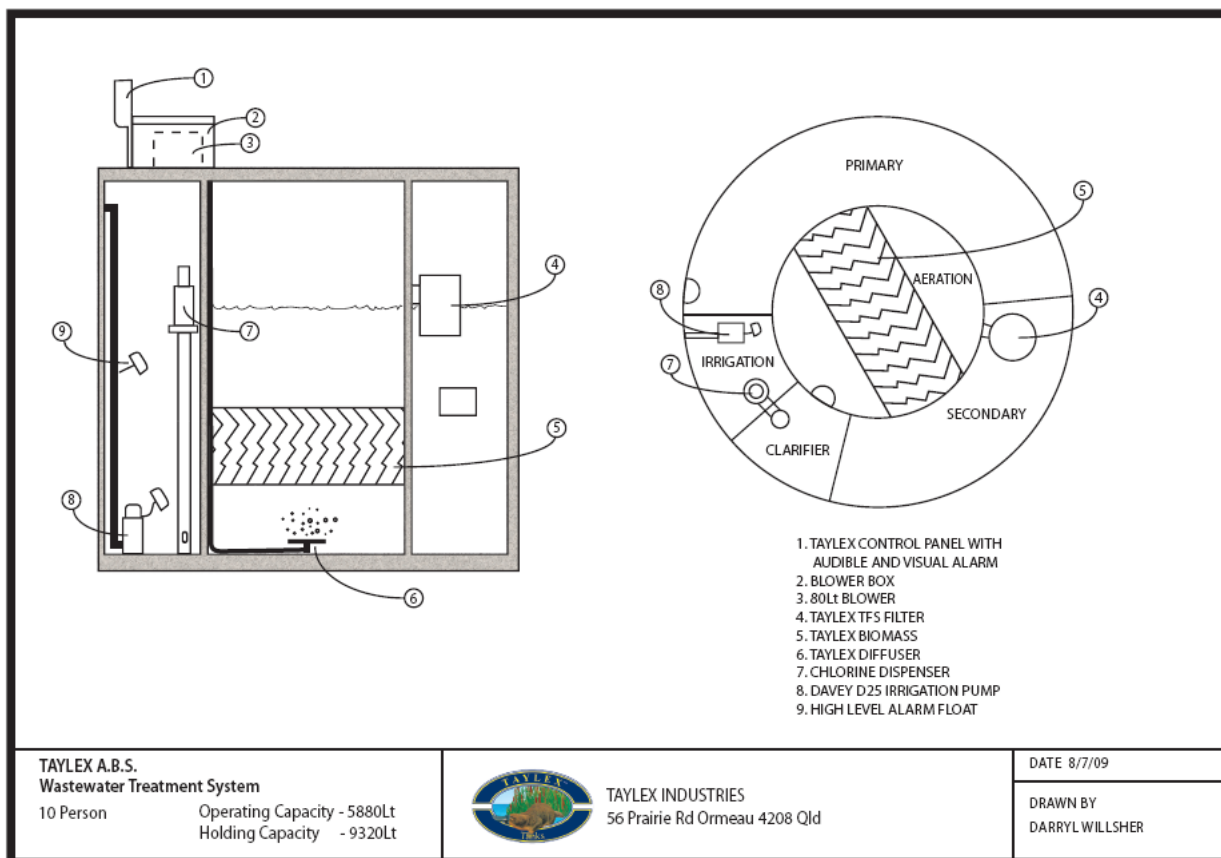
## Schematic drawings

## Taylex ABS

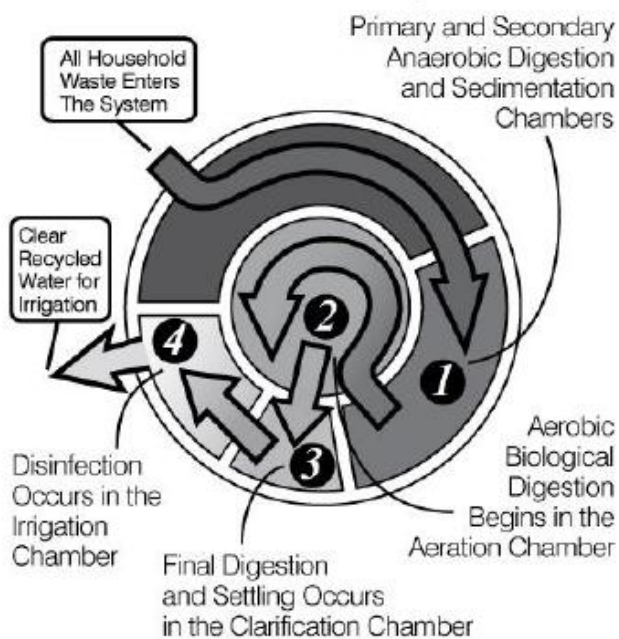


| SPECIFICATIONS                  |          | Control Panel           |                |
|---------------------------------|----------|-------------------------|----------------|
| Primary Pre-treatment Chamber   | 1,684 Lt | Solid State Circuitry   |                |
| Secondary Pre-treatment Chamber | 842 Lt   | Fully Programmable      |                |
| Aeration Chamber                | 2,071Lt  | Includes alarm Isolator |                |
| Clarifier                       | 662 Lt   | and overload protection |                |
| Chlorination/Pumpwell           | 621 Lt   |                         |                |
| TOTAL Operating Capacity        | 5,880 Lt |                         |                |
| TOTAL Holding Capacity          | 9,320 Lt |                         |                |
|                                 |          | Tank Construction       |                |
|                                 |          | All Concrete            |                |
|                                 |          | Height                  | 2300mm         |
|                                 |          | Inlet Invert            | 1830 or 1530mm |
|                                 |          | Diameter                | 2450mm         |
|                                 |          | Weight                  | 6.25tonnes     |



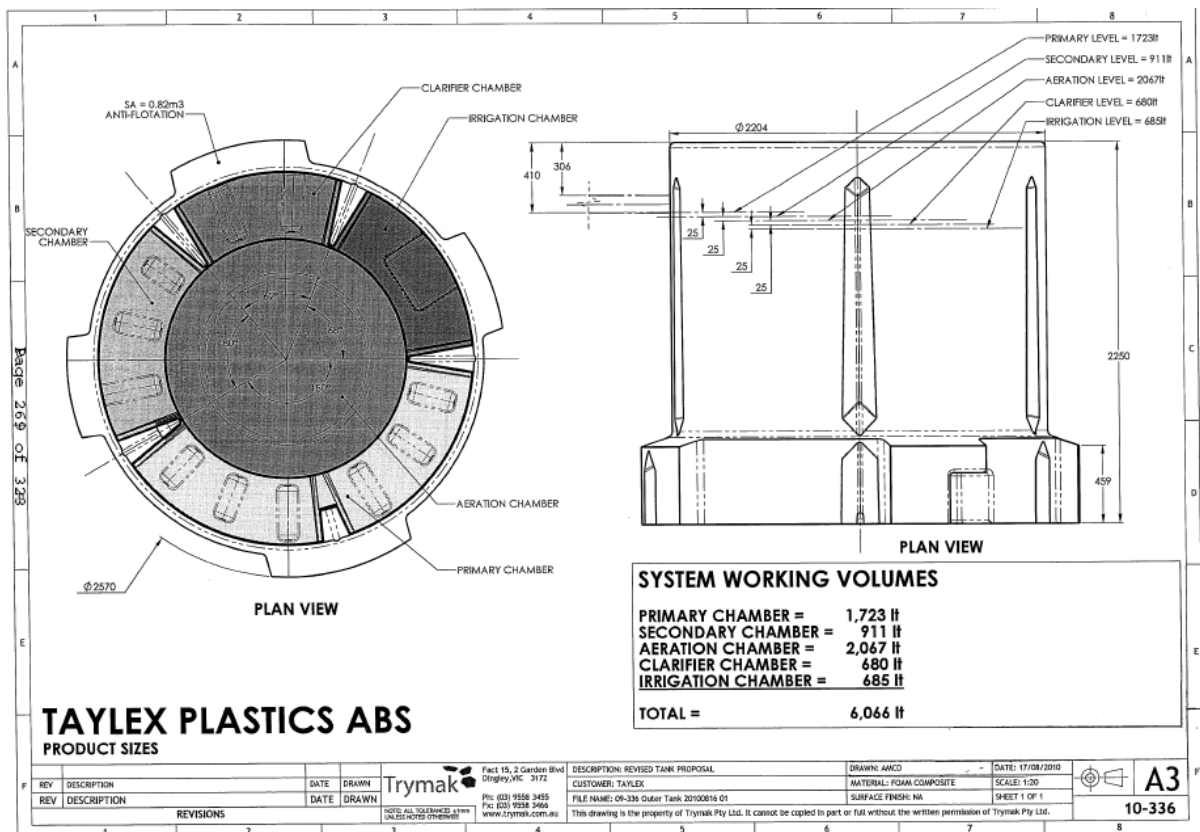
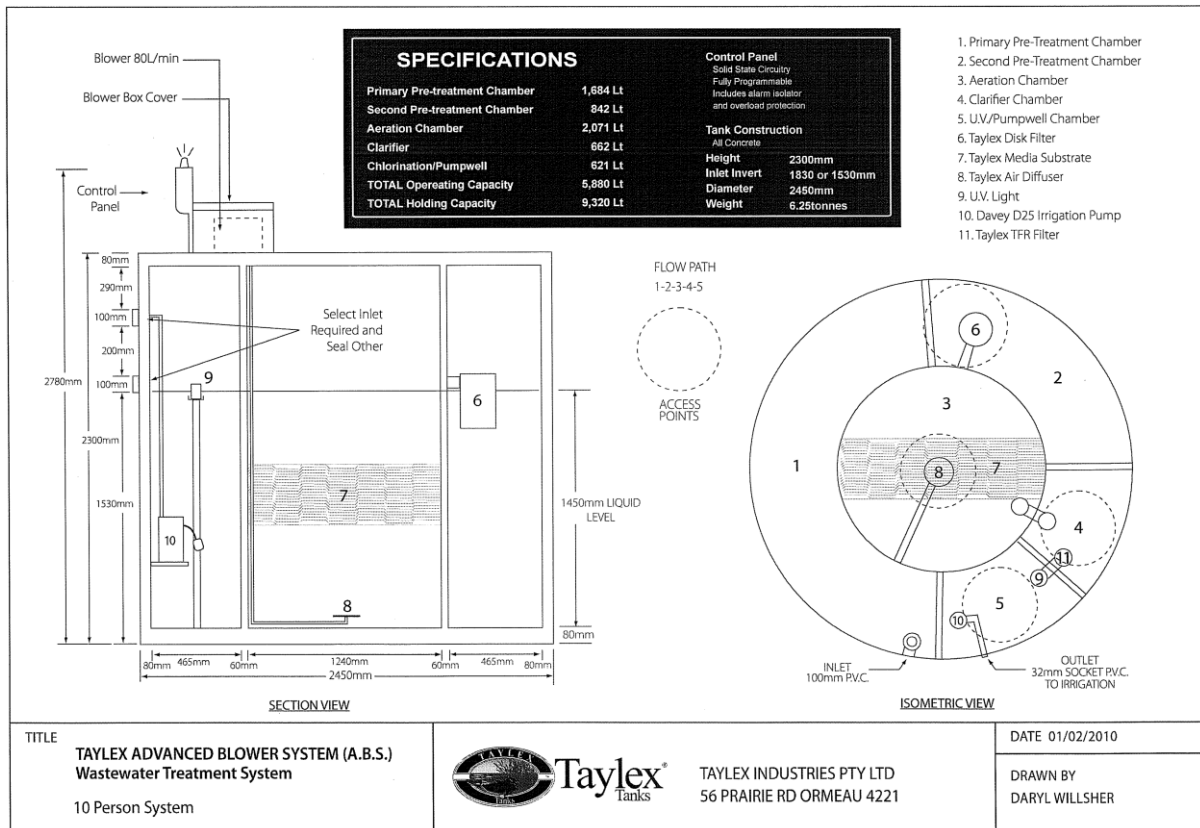


# The Four Stages to a Taylex Treatment System



## Appendix B

### Engineering Drawings



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Director, Building Control  
delegate of Minister for Workplace Relations

## Appendix C

### Component list and specifications

#### 1) Tank (Concrete)

Material: Precast reinforced concrete in accordance with AS/NZS 1546.1:2008  
Height: 2,350mm  
Diameter: 2,400mm  
Total Volume: 9,320L  
Working Volume: 5,880L  
Dry Weight: 6250k0067  
Invert levels: 1840mm and 1540mm

#### 2) Tank (Polyethylene)

Material: Polyethylene in accordance with AS/NZS 1546.1:2008  
Height: 2,250mm  
Diameter: 2,204mm  
Total Volume: 8,584L  
Working Volume: 6,066L  
Dry Weight: 350kg  
Invert level: 1840mm

#### 3) Taylex TFG Plate Filter

Material: A.B.S, Nylon & 316SS  
Height: 400mm  
Diameter: 300mm  
Plates: 29

#### 4) Nitto Air Blower LA80

Material: Alloy/plastic  
Height: 180mm  
Width: 200mm  
Length: 300mm  
Weight: 4.9kg  
Capacity: 80L/min  
Pressure: 160 mbar  
Motor Power: 86 Watt  
Power Source: 240V/50Hz

In addition to supplying the micro organisms in the bioreactor with oxygen, the blower is also used to supply air to the sludge lift using the “venturi principle”.

#### 5) Irrigation Pump

Height: 370mm  
Diameter: 225mm  
Weight: 9kg  
Capacity: ≤200L/min  
Head: 9m max  
Motor Power: 250 Watt  
Power Source: 230V/50Hz AC

The irrigation pump is self controlled via a ball bearing activated float switch. When the triggering volume is reached in the pump chamber, the ball bearing in the float moves and

creates an active connection. The treated effluent is pumped to the approved dispersal zone. As the chamber level falls, the float drops and de-activates the pump. The type and capacity of pump will be in accordance with land application requirements, with the Davey D25A as standard supply.

## **6) Sludge Recirculation System**

Operation: Air  
Material: PVC

This is a typical design for the trans-location of fluids using the "Venturi Principle". Air is injected toward the base of a vertical open ended PVC pipe. Continuous displacement occurs as the air moves vertically to the liquid, drawing liquid through the open ended pipe base. The air/liquid mixture reaches a vertical maximum where it then moves through a 90° bend back into the primary pre-treatment chamber. The pipe is arranged in the base of the clarifier so that residual sludge constitutes the main vacuum target. The sludge recirculation system operates continuously and during servicing, the service agent fully activates the sludge recirculation system to remove built up sludge from the clarifier and return it to the primary pre-treatment chamber.

## **7) Control Panel**

Height: 100mm  
Length: 160mm  
Width: 60mm  
IP Rating: IP44

Provides direct electrical supply for the automatically operating submersible pump, audible and visual alarm, LCD display of function mode, adjustment and malfunction alarm, and programmable control of air blower. Active switching allows for sampling function of effluent, power failure indication and restoration, and circuit breaker protection. Also incorporates power saving function and alarm testing sequence.

## **8) Cover Box**

Material: HD Polyethylene UV protected  
Height: 350mm  
Width: 600mm  
Length: 400mm

## **9) Alarm System High Water Float Switch**

Material: PVC  
Height: 50mm  
Width: 90mm  
Length: 120mm  
Trigger: High Water  
Code: 3  
Visual: Red L.E.D. and number 3 on panel  
Audible: Micro buzzer ≤ 10 dB

## **10) Alarm System Blower Failure**

Trigger: No or low air flow  
Code: 5  
Visual: Red L.E.D. and number 5 on panel

Audible: Micro buzzer  $\leq 10$  dB

**11) Bio Mass**

Material: Food grade PVC  
Height: 800mm  
Width: 720mm  
Length: 450mm  
Surface area 80m<sup>2</sup>

**12) Air Diffuser**

Material: PVC, Santoprene & Nylon  
Height: 35mm  
Diameter: 220mm  
Weight: 350g  
Type Fine bubble

